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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/781,234

02/18/2004

John M. Gascoyne

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EXAMINER

HODGE, ROBERT W

ART UNIT

PAPER NUMBER

1795

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/781,234

Applicant(s)

GASCOYNE ET AL.

Examiner

Robert Hodge

Art Unit

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 October 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-16 and 18-35 is/are pending in the application.
- 4a) Of the above claim(s) 1,3-15,18-21,28,30,32,34 and 35 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 16,22-27,29,31 and 33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

Applicant's arguments filed 8/16/07 have been fully considered but they are not persuasive. With regards to the Anticipation rejection applicants' arguments are not commensurate in scope with their claims. Applicants state that Cabasso cannot anticipate claims 1, 9 or 16, currently claims 1 and 9 are withdrawn from consideration so the Examiner will not address those claims and will only focus on claim 16.

Applicants argue that Cabasso teaches that the carbon supported electrocatalyst is applied to the GDL as a separate layer, there is nothing in claim 16 preventing the second carbon support from being applied separately from the first carbon support, and in fact dependent claims 26 and 27 both require that the first and second carbon supports are separate layers, which is taught by Cabasso as admitted to by applicants on page 13 of their remarks. Applicants also state that Cabasso's structure is limited to these two separate layers however they are both associated with the GDL and therefore read on the claim as recited. Applicants further state that Cabasso's electrode structure is explicitly designed for a cathode, currently claim 16 only recites a **substrate** and all of the dependent claims lack antecedent basis since there is no anode recited in claim 16. Furthermore the materials disclosed by Cabasso are materials used in the anode structure of a fuel cell. Applicants state that Cabasso calls the electrode a cathode at column 10, lines 42-44, however the Examiner only finds support for "electrode", it states that by using air as a cathodic reactant this electrode has better performance, but the air is being supplied to the fuel cell that the electrode is being tested in, no where

does it say that air is being supplied to the electrode of example 1, in fact starting at line 25 of column 10 it discusses applying a protonated Nafion solution to the electrode to make the membrane for the fuel cell with an open cell voltage being measured after the membrane is applied, that disclosure along with the materials of construction is a clear teaching that the electrode of Cabasso is in fact used as an anode in a fuel cell.

Despite all of applicants arguments, applicants have chosen to use a Jepson claim format, wherein everything contained in the preamble recited before the terms "the improvement comprising:" is admitted prior art. Therefore Examiner Yuan was not obligated to find those limitations in the prior art since it is admitted prior art. However Examiner Yuan went one step further to show applicants that everything in their Jepson claim is in fact known in the prior art by providing the Cabasso reference.

With regards to applicants claim to multiple priority documents, the Examiner acknowledges that applicants have described at length the reasoning as to why they deserve priority all the way back to 8/23/1999. The Examiner does not acquiesce to applicants' arguments that support for all of the instant claims can be found in every priority document. Currently the claims are being rejected by a U.S. Patent that was published July 21, 1998, which qualifies as prior art under 35 U.S.C. 102(b) regardless of whether applicants' priority is granted to 8/23/1999 or not. Until such time that an intervening reference is used in a grounds of rejection the claim for priority will not be further addressed.

Election/Restrictions

Applicant's election of claims 16, 22-27, 29, 31 and 33 in the reply filed on 10/30/07 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 22-27, 29, 31 and 33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 22-27, 29, 31 and 33 all recite the limitation "the improved anode structure" in the body of the claims. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 16, 22, 23, 26, 27, 29, 31 and 33 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,783,325 hereinafter Cabasso.

With respect to claims 16, 29, 31 and 33, Cabasso et al. teach a fuel cell anode structure comprising a substrate that is a gas diffusion layer (Column 6, Lines 34-35) and a carbon-based component comprising carbon blacks selected from the groups consisting of BLACK PEARLS 2000, Vulcan VX-72, KETJEN BLACK EC 300J, activated charcoal, Acetylene Black C-100, or mixtures thereof. See Column 6, Lines 36-58; Column 7, Lines 21-44. The BLACK PEARLS 2000 carbon material has a surface area of $1536 \text{ m}^2/\text{g}$ as disclosed in the instant specification. See Page 31. The Vulcan VX-72 carbon material has a surface area of $200 \text{ m}^2/\text{g}$. See Example 1. The KETJEN BLACK EC 300J carbon material has a surface area of $950 \text{ m}^2/\text{g}$. See Column 7, Lines 36-40. The activated charcoal typically has a surface area between 1000-1270 m^2/g as evidenced by Yamaura et al. (U.S. 6,824,908) and Hirashige (U.S. 2005/0214631 A1). The Acetylene Black C-100 carbon material has a surface area of $60 \text{ m}^2/\text{g}$. See Example 4. It is the position of the examiner that the probability of having a first carbon material having a BET surface area of at least $350 \text{ m}^2/\text{g}$, such as BLACK PEARLS 2000, KETJEN BLACK EC 300J or activated Charcoal, and a second carbon material, such as Vulcan VX-72 or Acetylene Black C-100 based on the teaching of Cabasso et al. does not constitute as "picking and choosing" because the groups for the mixture of two carbon materials are relatively small. Cabasso et al. further teach a catalyst layer ink solution is painted onto the gas diffusion electrode. See Column 10, Lines 9-24

Furthermore, Cabasso et al. do not specifically disclose the relative corrosion resistance during cell reversal at fuel cell operating temperatures. However, it is the

position of the examiner that such properties are inherent, given that both Cabasso et al. and the present application utilize the same carbon compounds. A reference which is silent about a claimed invention's features is inherently anticipatory if the missing feature *is necessarily present in that which is described in the reference*. In re Robertson, 49 USPQ2d 1949 (1999).

With respect to claims 22, 23, 26 and 27 Cabasso et al. teach a slurry of carbon materials and a binder (polyvinylidene fluoride) (i.e. a first carbon component) is cast onto a porous carbon cloth substrate. Care is taken to ensure that the slurry at least partially penetrated the cloth (i.e. the first carbon support is disposed on and within said gas diffusion layer) and then a second carbon component is applied on top of the first carbon component (i.e. separate layers). See Column 6, Lines 36-58, Example 1.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cabasso et al.

Cabasso et al. as discussed above discloses the claimed invention except for the first and second carbon components are mixed. It would have been obvious to one having ordinary skill in the art at the time the invention was made to mix the two carbon components of Cabasso et al., since it has been held that forming in one piece an article which has formerly been formed in two pieces and put together involves only routine skill in the art. *Howard v. Detroit Stove Works*, 150 U.S. 164 (1893).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert Hodge whose telephone number is (571) 272-2097. The examiner can normally be reached on 8:00am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RWH


JONATHAN CREPEAU
PRIMARY EXAMINER